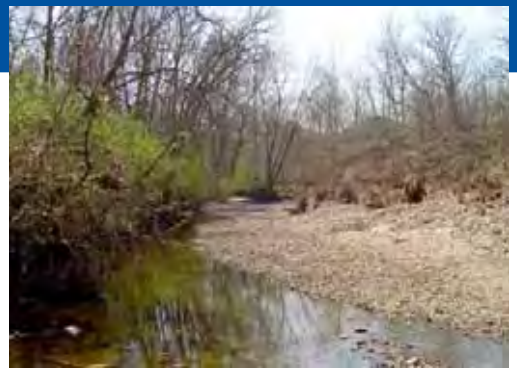

Urban streams can be preserved by limiting impervious surfaces and leaving a forested corridor adjacent to the stream.

TERMS TO KNOW

***Watershed*:** land area that drains into a stream.

***Channelization*:** straightening of a stream which shortens the stream channel, increases the slope and erosive power of the stream.

Headcut: (downcutting) vertical drop in the stream bottom due to erosion from increased water velocities.

***Streamside management zone*:** (riparian zone) strip of trees and other woody vegetation along both sides of a stream that protect a streambank from erosion and provide additional benefits.

***Impervious surface*:** surface which cannot be penetrated by water and increases potential surface runoff.

***Detention basins*:** small ponds used to detain runoff so water can be released at a slower, more natural rate.

Grade control structure: graded rock or other structure placed perpendicular across a stream from bank to bank to provide grade control and stabilize the stream.

The health of Missouri streams depends on the landowner. Remember . . . only you can help prevent the effects of urbanization from occurring and eroding your streams.

If you need more information, contact your nearest Missouri Department of Conservation Regional Office or:

Stream Unit
Missouri Department of Conservation
PO Box 180
Jefferson City, MO 65102-0180
(573)751-4115
www.mdc.mo.gov

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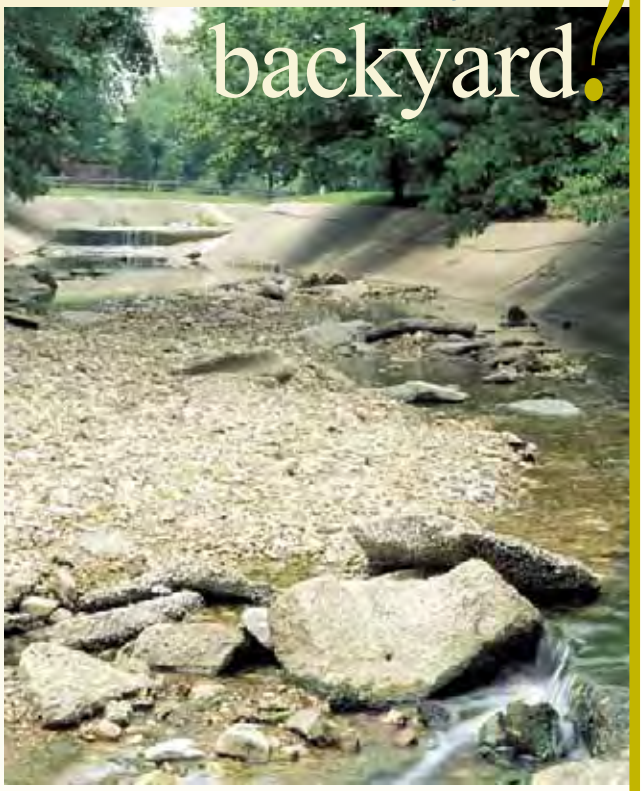
What happened to the stream in my backyard?



Mismanaged urban streams can become a liability to the landowner and the community.

"It's my backyard! It's eroding away! It never did that before!"
"Yeah, I know what you mean, we moved to this subdivision because of its natural beauty, and now it's washing downstream!"
"You know, things were okay until they built that mall up the hill. I wonder if that has anything to do with it . . . ?"

This situation is a familiar one for many Missouri urbanites. With new construction in urban areas, streamside properties are being negatively impacted from development upstream, downstream, or both.

Most stream problems in urban areas are caused by two factors:

1. **channelization**
2. **increased stormwater runoff**

Channelization, or stream straightening, stresses the stream system. When a stream is channelized, it results in a shorter channel with an increased slope. This leads to an increase in water velocity in the channelized reach. Faster moving water has more power to erode the stream bottom and banks.

Headcuts (streambed downcutting) are by-products of channelization and develop in and upstream of channelized reaches. Headcuts erode deep into streambeds and banks, creating streambanks that are bare of vegetation and too tall to be stable.

In order to recover from effects of channelization, a stream will begin to widen and tend to return to a natural meandering pattern. As a result, the widening, meandering stream may undermine lawns, trees, roads, and bridges. This eroded soil settles out and fills the channel downstream, greatly reducing the channel's capacity to carry water. This process also leads to further streambank erosion and increased flooding. In channelized streams, trees alone may not be enough to stabilize the eroding streambanks.

Channelized and armored streams with heavy stormwater runoff are unstable and transfer problems downstream. Channelization and armoring will lead to eroding streambanks above and below the channelized reach.

Increased stormwater runoff is the second major factor affecting urban streams. Watershed development and paving causes erosion and flooding. Vegetated land is capable of soaking up a great deal of rainfall which is then slowly released into streams via groundwater. However, in developed areas, rain falls on and flows over impervious surfaces (e.g. concrete, asphalt, rooftops) and drains almost instantly into a stream channel. With increased amounts of stormwater caused by accelerated runoff, streams flood more and flow faster. Furthermore, faster water erodes more streamside land, also causing streams to widen and deepen.

These two watershed alterations, **channelization and increased stormwater runoff**, are why many small backyard creeks turn into deep, wide canyons with steep, eroding banks.

How can streams be protected from urbanization?

Proper watershed planning before development can help reduce stream problems. Maintaining a wooded streamside management zone will:

- help make banks more resistant to erosion
- filter out chemicals harmful to the stream
- provide habitat and greenways for wildlife

The most effective way to protect streams is to object to channelization in your area and to try to minimize moving, clearing, and other developments near the stream. Most importantly, work with city planning and zoning boards to limit the amount of land covered by impervious surfaces and to require the use of detention basins, wetlands, and green space to slow water runoff from impervious surfaces. If your watershed is already developed, there still may be room for stormwater management structures like detention basins.

Streambank erosion, an indicator of a stream adjusting to changing watershed conditions, can be addressed in several ways. If the erosion can be tolerated, do nothing and let the stream adjust. If the erosion must be controlled, most of the solutions will involve rock rip-rap.

Streambed erosion is the most serious problem. This kind of erosion is also a sign that the stream is trying to adjust to a change, but unlike streambank erosion, vertical erosion should be stopped as soon as possible. The design and installation of a grade control structure will be required, which necessitates the services of a qualified engineer.